50X1-HUM

CLASSIFICATION CONFIDENTIAL CONFIDENTIAL

CENTRAL INTELLIGENCE AGENCY REPORT

INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS CD NO.

COUNTRY	USSR	DATE OF INFORMATION	1949
SUBJECT	Scientific - Chemistry		
HOW PUBLISHED	Monthly periodical	DATE DIST. 3 Jan 1950	
WHERE PUBLISHED	Moscow	NO. OF PAGES	3
DATE PUBLISHED	Aug 1949		
LANGUAGE	Russian	SUPPLEMENT TO REPORT NO.	

THIS IS UNEVALUATED INFORMATION

SOURCE Vestnik Akademii Nauk SSSR, No 8, 1949.

PROCEEDINGS OF THE DEPARTMENT OF CHEMICAL SCIENCES

June Session

A paper, "The Relation of Electrooxidization Processes to the Nature of Positively Charged Ions," was presented by N. A. Izgaryshev, corresponding member of the Academy of Sciences USSR, at the June session of the Department of Chemical Sciences, Academy of Sciences USSR. The author's investigations in this field are a further development of his study of the influence of "neutral" ions on the functioning of electrode processes, i.e., of ions which are present in electrolyzed solutions, but which should not have a direct effect upon the basic electrode process. In this paper the author reported on his comparative study of anode processes during the electrolysis of chlorides of magnesium, calcium, barium, potassium, sodium, lithium, rubidium and ammonium. He made analogous studies of the anode process to obtain persulfates of calcium, ammonium, lithium, magnesium, zinc, and aluminum. He compared the results of electrolyzing sulfates of various cations with those he had obtained in connection with the electrolysis of ammonium sulfate in the presence of certain added cations. He also reported on a theory which he developed earlier regarding the influence of fluorine ions on anode overvoltages in the electrolysis of sulfates.

The next paper was that of Academician A. N. Terenin and A. A. Krasnovskiy, Doctor of Technical Sciences, "Photochemical Reaction of Chlorophyll and Phthalocyanines." From this work experimental data was obtained on the chemical participation of chlorophyll in the process of its sensitizing action, and the basic ways to convert radiant energy into chemical energy in the presence of chlorophyll were shown. In connection with these studies, the views of K. A. Timiryazev on the reversible conversion of chlorophyll and of A. N. Bakh on photosynthesis as a coupled oxidation-reduction process have been further developed.

It was shown that the photochemical activity of chlorophyll does not determine the electron excitation state of the molecule but rather the continuous metastable condition. The generally accepted explanation introduced by A. N. Terenin in 1943 on the bi-radical nature of this condition of organic molecules explains the conversion of light energy into chemical energy taking place already in the chlorophyll molecule itself.

CLASSIFICATION CONFIDENTIAL CONFIDENTIAL

STATE	X	NAVY	X	NSRB		DISTRIBUTION					
ARMY	X	AIR	X	FBI							

The possibility of "physical" transmission of electron energy of excitation from chlorophyll to reactive molecules was not brought out by the authors.

Through special methods they discovered the formation of unstable products from the interaction of pigments with oxygen and organic peroxides. However, the possibility of chlorophyll dehydrogenation through interaction with other organic oxides has not been established. For the first time the formation of products of photochemical reduction of chlorophyll by its interaction with ascorbic acid and other compounds in the presence of atmospheric oxygen in the medium of organic bases was established. This unstable product of deoxidation (probably a type of semiquinone) possesses a great chemical activity, reacting reversely with many compounds in darkness.

The authors also obtained certain data on the mechanism of oxidation (with oxygen) sensitized with chlorophyll, and studied the oxidation-reduction reaction, the equilibrium of which is significantly displaced by irradiation. The chemical participation of chlorophyll in reactions which model the elementary photochemical process of photosynthesis was also shown.

Academicians S. I. Vol'fkovich, M. M. Dubinin, and A. N. Frumkin participated in the discussion of the papers, as did A. I. Brodskiy, A. A. Grinberg, S. P. Danilov, I. A. Kazarnovskiy, A. F. Kapustinskiy, B. V. Nekrasov, V. I. Spitsyn, K. V. Chibisov, corresponding members of the Academy of Sciences USSR, and many other scientific workers.

Committee on Scientific Photography and Cinematography

This committee, set up in 1948 as a part of the Department of Chemical Sciences, is presided over by K. V. Chibisov, corresponding member of the Academy of Sciences USSR. During the latter part of 1948 a Leningrad Division of the committee was organized.

The primary task of this committee is to assist in developing scientific research work for advancing methods of photographic and cinematographic investigation as well as in extending the use of these methods.

Since its establishment the committee has held two plenary sessions, at the first of which Corresponding Member K. V. Chibisov presented a paper, "Contemporary Photographic Materials and Perspectives for Their Further Improvement." In this paper the historical progress of the photographic method from the standpoint of the constant improvement of photosensitive layers, which play an important part in photography was outlined, and an analysis of the improvement of properties of photographic materials was given. Contemporary ideas on the nature of photosensitivity were set forth.

At the second plenary session the structural properties of photosensitive layers were discussed. Corresponding Member Chibisov indicated that the discreet granular structure of both the highly photosensitive silver halide gelatinous films and the blackenings obtained from them appears to cause many difficulties encountered in the production of various fine structures and to be a source of errors in measurements. Moreover, in many cases this circumstance limits the possibility of using the photographic method.

Prof Yu. N. Gorokhovskiy's first report was "Classification of the Structural Properties of Photosensitive Films." His second paper dealt with the study of the granularity of photographic blackenings, and included an account of a photographic projection method and a special device for this purpose which was developed by him and T. M. Levenberg.

CONFIDENTIAL

Problems of the formation of structural properties of photosensitive films in the building up of photographic emulsions were examined in Prof K. S. Lyalikov's report, "Study of the Physical Ripening of Photographic Emulsions," P. F. Ipatov's "Dispersibility of the Solid Phase of a Photographic Emulsion and Its Dependence on the Content of Ammonia and Potassium Bromide During Ripening," and V. L. Zelkman's "Effect of Crystallization Conditions of Silver Halide on the Interrelation of Photographic and Photometric Emulsion Properties."

Problems on the thickness and form of emulsion microcrystals depending on the conditions of emulsion preparation and use of ammonia and nonammonia methods were covered in a report presented by P. V. Meyklyar, I. P. Protas, and P. Kh. Prus.

In I. R. Protas, V. V. Vorob'yevaya and Ye. A. Krakau's report the influence of the microcrystalline structure of emulsions on the resolving power of a photosensitive film was discussed. L. P. Moroz reported his findings on the dependence of resolving power on the parameters of the optical system, subject contrast, and the resolving powers of the photographic layer.

G. S. Barinov reported on the effect of light diffusion in an emulsion layer and its influence on the amount of photographic blackening.

On the basis of an interchange of opinions in one of the organizational meetings of the committee, a permanent active group of specialists was established to deal with problems of selecting photomaterials for scientific research purposes (astronomy, spectography, roentgenography, and others).

At conferences of the Leningrad Division of the committee reports on the history of scientific and applied photography in prerevolutionary Russia as well as on the work of Soviet scientists in the field of photography were heard.

The committee is preparing to call an all-Union conference on scientific and technical applications of photography and cinematography.

- E N D -

CONFIDENTIAL

CONFIDENTIAL

Sanitized Copy Approved for Release 2011/09/19 : CIA-RDP80-00809A000600270730-1